DOCUMENT RESUME

ED 325 613 UD 027 810

TITLE	Identifying Schools for Program Improvement and Conducting a Local Annual Review.
INSTITUTION	Advanced Technology, Inc., Indianapolis, IN.
SPONS AGENCY	Department of Education, Washington, DC.
REPORT NO	TAC-B-30
PUB DATE	90
NOTE	19p.; Materials presented at the United States Department of Education Chapter 1 Program Improvement Meetings--Regional Meeting (Detroit, MI, February 12-13, 1990).
PUB TYPE	Speeches/Conference Papers (150) -- Legal/Legislative/Regulatory Materials (090)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Annual Reports; Basic Skills; Compensatory Education; Elementary Secondary Education; *Federal Programs; *Measurement Objectives; *Measurement Techniques; Outcomes of Education; Preschool Education; *Program Evaluation; *Program Improvement
IDENTIFIERS	*Education Consolidation Improvement Act Chapter 1

ABSTRACT

This document comprises information and various forms that can be used by schools to conduct an annual local review of their Education Consolidation and Improvement Act Chapter 1 School Program and identify programs needing improvement. The following materials are included: (1) a summary of requirements for a local annual review; (2) an outline of school-level information to be included in an annual review; (3) a description of the annual review process; (4) a form for reporting pre- and posttest scores (aggregate performance for grades 2 and higher); (5) a form for reporting supporting information about aggregate performance; (6) a form for reporting the review of desired outcomes; (7) a form for reporting supporting information on desired outcomes, grade by grade; (8) a form for identifying students who have not shown substantial progress toward meeting desired outcomes, or whose performance shows no improvement or a decline; (9) a description of the use of the mean NCE gain as a measure of aggregate performance; (10) an example of calculation of aggregate mean and median NCE scores; (11) three graphs demonstrating little difference between mean and median, the effect of positive outlier, and the effect of negative outlier; and (12) an explanation of central tendency and variability as they apply to aggregate performance measures. (FMW)

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ED325613

1990

United States Department of Education
Chapter 1 Program Improvement Meetings

Identifying Schools for Program Improvement and Conducting a Local Annual Review

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AGENDA

U.S.D.E. Regional Meeting
Detroit, MI
February 12-13, 1990

Identification of Schools for Program Improvement

Federal Legislation Governing Identification of Schools

Methods of Identification at District Level

Evaluation Requirements for All Chapter 1 Programs

Summary of Regulations for Local Annual Review

Conducting a School-Level Annual Review

Aggregate Performance: Mean or Median Data Bases Which Can Assist in Chapter 1 Evaluations

SUMMARY OF REQUIREMENTS FOR LOCAL ANNUAL REVIEW OF CHAPTER 1 SCHOOL PROGRAM IMPROVEMENT

A. **Aggregate Performance in Basic and Advanced Skills:** Aggregate across grade levels within subject area for each school. Aggregations are required for every primary subject area.

1. Measure achievement in basic and advanced skills in reading, mathematics and language arts.

2. To assess progress in advanced skills, obtain scores for "comprehension" or equivalent scores of nationally normed reading test, and "problems and applications" or equivalent scores from nationally normed math test.

3. To assess achievement in language arts, use language arts or reading tests. If a reading test is used, assess achievement in both basic and more advanced skills.

4. Exclude from analysis children who are not proficient in English.

5. Measure student achievement over approximately 12 months.

6. Report on either spring-to-spring or fall-to-fall testing interval.

7. Report in NCEs.

B. **Progress in Desired Outcomes:** Show substantial progress in achieving outcomes.

1. Desired Outcomes are the LEA's goals to improve the educational opportunities of educationally deprived children to help those children:
   Succeed in regular educational program.
   Attain grade-level proficiency.
   Improve achievement in basic and more advanced skills.

2. At a minimum, desired outcomes must be expressed in terms of aggregate performance.

3. LEA's may use other indicators.

4. Desired outcomes must be established for Pre-K, K, and 1, and limited English proficient children who are receiving Chapter 1 services.

C. **Sustained Improved Performance:** Determine whether improved (aggregate) performance is sustained more than 12 months.

D. **Assessment of parental involvement program.** (See P.L.100-297, Sec. 1021 (a)(4)).

CHAPTER 1 ANNUAL REVIEW

Each school must conduct an annual review of data in 1 and 2, and possibly 3-6, and disseminate the information to parents, teachers, and others.

Must be discussed at annual review

School-level information

1. Aggregate gains for all educationally deprived students in grades 2 to 12, using Spring to Spring or Fall to Fall data.

    - Basic skills: record total reading and/or total math scores in NCEs
    - Advanced skills: record reading comprehension and/or mathematics problem solving and application scores in NCEs
    - Compute gains and losses and find the median or mean

2. Monitor and assess desired outcomes at all grade levels using the criteria established for "substantial progress." Set up databases by school for each outcome in your project application.

May be discussed at annual review

School-level information

3. Look at student level gains and attainment of desired outcomes and make program modifications for children who didn't gain.

District-level information

4. Look at performance in the regular program.
5. Conduct a sustained effects study every three years.
6. Assess parent involvement.

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did you know that...

an annual review of each school's data must take place at the end of the school year or the following fall?

The final regulations require that "for each project school" the LEA conduct an annual review of the effectiveness of the Chapter 1 program. This review must consider at a minimum the aggregate gains made on achievement tests by Chapter 1 students from Grade 2 up, and (for the 1989-90 school year and beyond) the progress made toward attaining the desired outcomes stated in the LEA's application. The annual review, which generally should be done in late spring, might also consider any evaluation information pertaining to the Pre-K, K, and Grade 1 components of the school's program.

What is an annual review? Most likely it's an occasion when several stakeholders sit down and review evaluation results together. The LEA Chapter 1 coordinator and the person completing the evaluation, for example, might meet with the building principal and Chapter 1 instructional staff. This would be a good time to identify children who didn't progress as expected and to start planning an appropriate course of action for both program and student improvement. Additionally, results of the review must be made available to teachers, parents of participants, and other appropriate parties.

For schools that showed no improvement in aggregate performance or did not show substantial progress toward meeting their desired outcomes, a program improvement plan must be developed and implemented.

Documentation of the annual review for all Chapter 1 schools should be kept by the LEA and be available during SEA on-site monitoring.

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October, 1989

School-Level Annual Review

School: _____ **Lead Person:** _____

Review of pre-post test scores (aggregate performance for grades 2 and higher).

Instructional Area	NCE Gain*	Primary Focus Yes/No
Reading (Basic)		
Reading (Advanced)		
Math (Basic)		
Math (Advanced)		
Lang. Arts		

* Gain measured - spring to spring or fall to fall

Did the school reach the aggregate performance goals for the instructional area that is the primary focus of the school's Chapter 1 Program?

Yes ☐ No ☐

SUPPORT PAGE FOR AGGREGATE PERFORMANCE

GRADE	READING-BASIC			READING-ADVANCED			MATH-BASIC			MATH-ADVANCED			LANG. ARTS		
	N	NCE Ave. Gain	#Not Making Gain	N	NCE Ave. Gain	#Not Making Gain	N	NCE Ave. Gain	#Not Making Gain	N	NCE Ave. Gain	#Not Making Gain	N	NCE Ave. Gain	#Not Making Gain
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
TOTAL															

REVIEW OF DESIRED OUTCOMES STATED IN CHAPTER 1 APPLICATION

Desired Outcomes	% Attaining	Outcome Met? Yes/No
1.		
2.		
3.		
4.		
5.		
6.		

Did the school show "substantial progress" * toward meeting all desired outcomes? **Yes** or **No**

**Definition of "substantial progress" from the State Plan for Chapter 1 Improvement*

_____

_____

The school is identified to implement the Chapter 1 program improvement requirements (Sec. 200.38) if the school did not both reach the aggregate performance goals and make substantial progress toward achieving the stated desired outcomes.

School identified for program improvement? **Yes** or **No**

Grade By Grade Support Page for Desired Outcomes

Desired Outcome # ___. _____

Grade	Attained Outcome		Did Not Attain Outcome		Total
	N	%	N	%	
K					
1					
2					
3					
.					
.					
12					
Total					

Was desired outcome attained?
Yes or No

Comment_____

_____

_____

_____

_____

_____

_____

_____

_____

Desired Outcome # ___. _____

Grade	Attained Outcome		Did Not Attain Outcome		Total
	N	%	N	%	
K					
1					
2					
3					
.					
.					
12					
Total					

Was desired outcome attained?
Yes or No

Comment_____

_____

_____

_____

_____

_____

_____

_____

_____

Desired Outcome # ___. _____

Grade	Attained Outcome		Did Not Attain Outcome		Total
	N	%	N	%	
K					
1					
2					
3					
.					
.					
12					
Total					

Was desired outcome attained?
Yes or No

Comment_____

_____

_____

_____

_____

_____

_____

_____

_____

Desired Outcome # ___. _____

Grade	Attained Outcome		Did Not Attain Outcome		Total
	N	%	N	%	
K					
1					
2					
3					
.					
.					
12					
Total					

Was desired outcome attained?
Yes or No

Comment_____

_____

_____

_____

_____

_____

_____

_____

_____

Student Identification

As part of the annual evaluation you are required to identify all students who have not shown substantial progress toward meeting desired outcomes or whose performance show no improvement or a decline.

1. **List all students in the Chapter 1 program.**
2. **Indicate their current grade placement (during year when data was gathered).**
3. **Indicate a 1 for students not meeting goals for the first time, and a 2 if this is the second (or more) consecutive year in which the child was identified.**
4. **Place (X)'s to indicate areas in which the child did not improve.**

Student Name	GR	Reading		Math		Lang Arts	Desired Outcomes						Will student be in program next year?		Is student identified for program improvement?		Number of years in program
		Basic	Adv.	Basic	Adv.		1	2	3	4	5	6	Yes	No	Yes	No	

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did you know that...

the median NCE gain may be used as a measure of aggregate performance for program improvement purposes?

Federal regulations (Federal Register, May 19, 1989) state that "...an LEA shall implement [a program improvement plan] with respect to each school that . . . shows no improvement or a decline in aggregate performance of participating children for a 12-month period."

According to the "Draft Policy Manual" (October, 1989), both the mean NCE gain and the median NCE gain may be used as indicators of aggregate performance for program improvement purposes. The manual states that "Where SEAs approve the use of the median, LEAs must use them uniformly, e.g., an LEA must use either means or medians in all their Chapter 1 buildings--they may not be used selectively in individual schools to select the one which results in avoiding program improvement in a given building."

The measure of central tendency used by a school district should be the one which most accurately expresses the aggregate performance of Chapter 1 students. The mean, or average, NCE gain is determined arithmetically and is based on test scores of all students involved in the program. The median NCE gain is the single score exactly in the middle of the distribution and separates the top 50% from the bottom 50% of students.

Because the mean is based on all scores, it is affected by extreme scores which may inflate or deflate it disproportionately. For instance, in programs which have few students, if one or two students make very large NCE gains, the mean may be unnaturally large. In such a case, however, the median would not be affected and would therefore be a better measure of central tendency than the mean.

When deciding which central tendency measure to use, consider the following:

1. Sample Size - How many scores are being considered? As the sample size increases, the mean and median tend to become more similar.

2. Tendency to have extreme scores - Are there special groups of students involved whose scores would tend to fluctuate more than most of the students in the group?

3. Are computer facilities available which will enable you to make necessary calculations?

4. Will the median result in a valid representation of the effectiveness of the Chapter 1 programs in a majority of the schools in the LEA?

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January, 1990

An Example of Calculation of Aggregate Mean and Median NCE Scores

Assume that each set of scores depicted in Figures 1 through 3 represents performance of grades 2, 3, and 4 in a school. Calculate mean and median gain scores for the school as follows:

Mean

1. Multiply the mean NCE gain for each grade by the number of students whose scores were used to calculate the mean. Then add both the number of students (N) across the grades and the products (Total Gains).

	Mean	X	N	=	Total Gain
Grade 2	3.4		10		34
Grade 3	3.0		11		33
Grade 4	-2.6		10		-26
Total			31		41

2. Divide total gains by the total number of students in all three schools.

$$\frac{\text{Total Gains} = 41}{\text{Total N} \quad = 31} = 1.32$$

The schoolwide mean NCE gain is 1.32.

Median

1. Put all of the student gain scores into a file and sort them from lowest to highest or from highest to lowest. Note that all scores from the school are ranked as a group.

-31	3
-28	3
-11	4
-7	4
-5	5
-4	5
-4	5
-2	6
-2	6
-1	7
0	8
1	11
2	13
2	13
2	33
3	

2. Count the number of students. In this case, there are 31.

3. If the number of students is odd, count up from the bottom or down from the top to find the middle score. In this case, the sixteenth score from the top or bottom is 3.

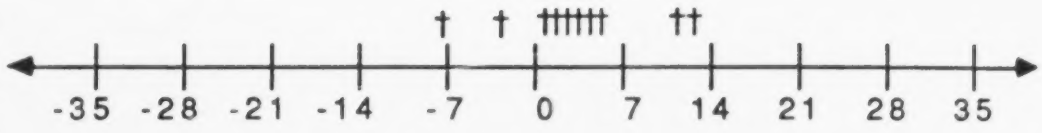
4. If the number of students is even, the median is halfway between the two scores which are exactly in the middle of the distribution. (Example: A distribution contains the following scores - 1, 2, 3, and 4. The median is half way between 2 and 3, or 2.5.)

The median NCE gain score for the school is 3.

Note: Material for this paper was adapted from "Aggregate Performance Measures: The Mean or the Median" by Barbara Lawrence, Research and Training Associates, Inc.

Figure 1: Little Difference Between Mean and Median

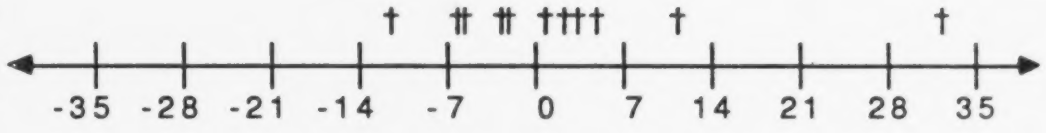
Student Number	NCE Gain/Loss
1	-7
2	-4
3	1
4	2
5	3
6	4
7	5
8	6
9	11
10	13



Mean = 3.4
Median = 3.5

Figure 2: Effect of Positive Outlier

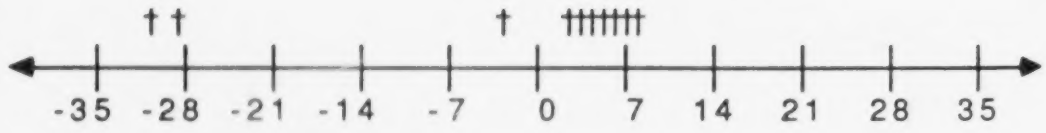
Student Number	NCE Gain/Loss
1	-11
2	-5
3	-4
4	-2
5	-1
6	0
7	2
8	3
9	5
10	13
11	33



Mean = 3.0
Median = 0

Figure 3: Effect of Negative Outlier

Student Number	NCE Gain/Loss
1	-31
2	-28
3	-2
4	2
5	3
6	4
7	5
8	6
9	7
10	8



Mean = -2.6
Median = 3.5

† = 1 student

AGGREGATE PERFORMANCE MEASURES: THE MEAN OR THE MEDIAN

CENTRAL TENDENCY

The two most common descriptive measures of a group of scores are measures of central tendency and variability. That is, characteristics of a group can be described by identifying a middle reference point and summarizing how the scores are arranged around it. Different measures of central tendency provide different information about the group. Two of them, the median and the mean, may be used for aggregating data for purposes of assessing "aggregate performance."

THE MEDIAN is the point in a distribution of scores at which 50% of the scores fall above and 50% fall below--that is, the middle ranking number in a set of numbers. It identifies the central ranking score within a group without reference to the actual value of the score. This information is useful when looking at aggregate performance because it lessens the influence of extreme scores in determining typical performance in the program.

THE MEAN is determined arithmetically, and is based on the values of all scores in the distribution. It is what most people call the "average," and is the most commonly encountered measure of central tendency. The mean differs from the median in that the median is the central **SCORE** in the distribution and the mean is the central **VALUE** of the distribution of scores. Every score value in the distribution influences the mean. Therefore scores that are extreme or atypical of the majority may inflate or deflate the mean, making it a less accurate indicator of typical performance of students in the program in those instances.

VARIABILITY

The amount of influence extreme or outlier scores will have on the mean also depends on the variability of the scores. Scores from a very large, heterogeneous group, if plotted on a continuum, will generally form the "bell curve" shape, with the majority of scores at the middle point on the continuum. In this type of distribution, the mode, the median, and the mean have identical values.

Scores based on smaller numbers and/or groups that are more homogeneous, however, are often not normally distributed--that is, the majority of the scores are collected around a point somewhere above or below the middle point on the continuum. In this type of distribution, the mode, the median, and the mean are different, and are distributed along the continuum in relation to where the majority of the scores cluster. If the cluster of scores is below the center of the continuum, the mean score will be higher than the median; if the cluster of scores is above the center of the continuum, the mean will be below the median. The presence of one or two extreme scores at either end of the distribution can change a normal distribution with identical values for the mean and median to one where the mean and median are different. It is in these instances that consideration should be given to using the median instead of the mean for summarizing aggregate performance measures.